MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2300
Gaithersburg, Maryland 20899-2300

SRM Number: 2580
MSDS Number: 2580
SRM Name: Powdered Lead Paint

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Description: This Standard Reference Material (SRM) is intended for use in the evaluation of methods used to determine lead in paint, and for the calibration of related apparatus. SRM 2580 consists of powdered paint material collected from the interior surfaces of housing. Each unit consists of 30 g of powdered paint, with a certified lead content.

Substance: Powdered Paint, Nominal 4 % Lead

Other Designations (Lead): Plumbum, Pb

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component:	Lead
CAS Number:	7439-92-1
EC Number (EINECS):	231-100-4
Nominal Mass Fraction (%):	4
EC Classification:	T (Toxic), N (Dangerous for the Environment); not classified in Annex I of Directive 67/548/EEC.
EC Risk:	R20 (harmful by inhalation) R22 (harmful if swallowed) R33 (danger of cumulative effects) R61 (may harm unborn child) R62 (possible risk of impaired fertility)
EC Safety:	S2 (keep out of the reach of children) S23 (do not breathe fumes) S45 (in case of accident or illness, see doctor; show label) R61 (avoid release to the environment)

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0-4): Health = 3 Fire = 0 Reactivity = 0

Major Health Hazards: Harmful if inhaled or swallowed. Danger of cumulative effects. May harm the unborn child or cause impaired fertility.

Physical Hazards: Container may break.

Potential Health Effects (of lead dust):

Inhalation: Causes respiratory tract irritation; effects described for ingestion may also occur. Inhalation of lead (or other metal) oxide particles smaller than 1.5 μm can cause metal fume fever, with flu-like symptoms, metallic taste, fever, chills, profuse sweating, cough, weakness, thirst, headache, chest pain, muscle pain, frequent urination, and diarrhea.

Skin Contact: Causes skin irritation. May be absorbed through skin.

Eye Contact: Causes eye irritation.

Ingestion: Causes damage to the blood-forming organs, kidneys, and central nervous system. May harm the unborn child or cause impaired fertility. Lead has also caused cancer in laboratory animals. Symptoms of exposure may include muscle pain and weakness, weight loss, abdominal pain, vomiting, diarrhea or constipation, anorexia, lassitude, insomnia, memory loss, and low blood pressure.

Medical Conditions Aggravated by Exposure: Disorders of the blood, kidneys, gastrointestinal tract, respiratory tract, or nervous system.

Listed as a Carcinogen/ Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs	X	
By the Occupational Safety and Health Administration (OSHA)		X

4. First Aid Measures

Inhalation: Move the person to fresh air immediately. If not breathing, qualified personnel may start CPR or give oxygen if necessary. Get medical aid at once, and bring the container or label.

Skin Contact: Remove contaminated clothing and shoes. Flush affected skin with water for at least 15 minutes, then wash thoroughly with soap and water. If skin irritation persists, get medical aid and bring the container or label. Wash contaminated clothing before reusing.

Eye Contact: Remove contact lenses (if any). Do not allow victim to rub eyes or keep eyes closed. Flush eyes with large amounts of running water for at least 30 minutes, keeping eyelids open and raising lids to remove all chemical. Get medical aid at once, and bring the container or label.

Ingestion: Contact a poison control center immediately for instructions. Wash out mouth with water, but do not induce vomiting. Get medical aid at once, and bring the container or label.

5. Fire Fighting Measures

Fire and Explosion Hazards: Finely-divided lead dust or powder is a moderate fire hazard and a moderate explosion hazard when dispersed in the air at high concentrations and exposed to heat, flame, or incandescence. Explosions may also occur upon contact with certain incompatible materials (see Section 10).

Extinguishing Media: Use extinguishing media appropriate to the surrounding fire, such as water spray, carbon dioxide, dry chemical, or foam.

Fire Fighting: Avoid inhalation of material or products of thermal decomposition or combustion. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA). Cool containers with water spray until well after the fire is out.

Flash Point (°C): N/A

Autoignition (°C): N/A

Flammability Limits in Air: N/A

Lower Explosive Limit (LEL): N/A

Upper Explosive Limit (UEL): N/A

Flammability Class (OSHA): N/A

Products of Thermal Decomposition: Lead oxide fume (highly toxic and respirable).

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Evacuate the spill area. Vacuum or sweep up material immediately, in a manner that avoids raising dust. Place in a suitable disposal container, observing precautions in Section 8 (Exposure Controls and Personal Protection).

Disposal: Refer to Section 13, Disposal Considerations.

7. HANDLING AND STORAGE

Storage: Store this material in the original container in a cool, dry environment. Protect from moisture, heat, light, and airborne contaminants.

Safe Handling Precautions: Wear safety goggles and a dust mask or respirator if necessary. Avoid contact or wash after handling.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

OSHA PEL:	0.05 mg/m^3
OSHA Action Level:	30 $\mu g/m^3$ (8 hrs)
ACGIH TWA-TLV:	0.05 mg/m^3
NIOSH TWA-TLV:	0.10 mg/m^3
UK CLWR TWA:	0.15 mg/m^3

Ventilation: Use local or general exhaust to keep employee exposures below limits. Local exhaust ventilation is preferred because it can control contaminant emissions at the source, preventing dispersion into the general work area. Refer to the ACGIH document *Industrial Ventilation, a Manual of Recommended Practices*.

Respirator: If necessary, refer to the *NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84* for selection and use of respirators certified by NIOSH.

Eye Protection: Use chemical safety goggles or a full face shield where dusting or splashing of solutions may occur. See OSHA standard (29 CFR 1910.133) or European Standard EN166. The employer should provide an emergency eye wash fountain and safety shower in the immediate work area.

Personal Protection: Wear gloves and coveralls or other work clothing that prevents prolonged or repeated direct skin contact. An appropriate locker-shower system is required for lead handling operations.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component: Lead

Appearance and Odor: White to silvery gray solid, odorless

Relative Molecular Weight: 207.2

Molecular Formula: Pb

Density (g/cm^3): 11.3

Solvent Solubility: Nitric acid, hot sulfuric acid

Water Solubility: Nearly insoluble

Boiling Point (°C): 1740 (3164 °F)

Melting Point (°C): 328 (622.4 °F)

Vapor Pressure (Pa): N/A

Vapor Density (Air = 1): N/A

Critical Solution Temperature: N/A

pH: N/A

10. STABILITY AND REACTIVITY

Stability: __X__ Stable _____Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Contact with incompatible materials.

Incompatible Materials: Other metals, metal carbides, acids, oxidizers, halogens, combustible materials, peroxides.

Fire/Explosion Information: Under normal conditions, this material is not a significant fire or explosion hazard, but dust-air mixtures may ignite or explode. Contact with some incompatibles may also cause an explosion hazard.

Hazardous Decomposition: Thermal decomposition may produce toxic lead oxides.

Hazardous Polymerization: _____ Will Occur __X__ Will Not Occur

11. TOXICOLOGICAL INFORMATION

Toxicity Data:

Human, IDLH (inhalation): 700 mg/m^3
Human, TC_{Lo} (inhalation): 10 $\mu g/m^3$
Woman, TD_{Lo} (oral, 6 yrs): 450 mg/kg
Rat, LD_{Lo} (intraperitoneal): 1 g/kg

Target Organ(s): Primarily the nervous system and kidneys.

Mutagen/Teratogen: Chronic lead exposure may cause birth defects.

Health Effects: See Section 3.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data:

Japanese quail (*Coturnix japonica*): LC_{50} (5 days, in diet) > 5,000 ppm
Carp (*Cyprinus carpio*): LC_{50} = 856.7 µg/L
Flounder (*Paralichthys olivaceus*): LC_{50} = 9650 µg/L
Eastern narrow-mouthed toad (*Gastrophryne carolinensis*): LC_{50} = 40 µg/L
Worm (*Lumbriculus variegatus*): LC_{50} = 740 µg/L

Environmental Summary: Lead is toxic to many terrestrial and aquatic organisms. This material bioaccumulates in plants and animals, but has limited mobility and bioavailability in soil.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Lead is classified as RCRA waste number D008. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste under 40 CFR 261.3, and must also consult state and local hazardous waste regulations to ensure complete and accurate classification.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated.

15. REGULATORY INFORMATION

U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): Reportable quantity (RQ) is 4.54 kg (10 lbs) lead, for solid metal particles greater than 100 µm (0.004 inch) in diameter. For larger pieces, reporting is not required.

SARA Title III Section 302: Not regulated.

SARA Title III Section 304: Not regulated.

SARA Title III Section 313: Lead is regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE:	Yes
CHRONIC:	Yes
FIRE:	No
REACTIVE:	No
SUDDEN RELEASE:	No

STATE REGULATIONS

California Proposition 65: Regulated (known to cause cancer and reproductive toxicity).

CANADIAN REGULATIONS

WHMIS Classification: D2A, Materials Causing Other Toxic Effects – Very Toxic

WHMIS Ingredient Disclosure List: Yes

CEPA Domestic Substances List (DSL): Yes

EUROPEAN REGULATIONS

EU/EC Classification: T (Toxic), N (Dangerous for the Environment); not classified in Annex I of Directive 67/548/EEC.

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Listed

TSCA 12(b), Export Notification: Not listed

16. OTHER INFORMATION

Sources:

Amdur MO, et al. (ed.), *Casarett and Doull's Toxicology: The Basic Science of Poisons*, 4th Edition. New York: McGraw-Hill, 1993.

PAN Pesticides Database: Lead.

U.S. Agency for Toxic Substances and Disease Registry, *Draft Toxicological Profile for Lead*. Updated Sept 2005.

U.S. National Institute for Occupational Safety and Health, *NIOSH Pocket Guide to Chemical Hazards*, September 2005 edition. DHHS (NIOSH) Publication No. 2005-151.